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Original article

QUALITY OF RECOVERY AFTER TOTAL ABDOMINAL HYSTERECTOMY

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Abstract

Introduction: Open gynecological surgery results in a large wound and severe postoperative pain, and adequate postoperative analgesia is necessary. This observational case review aimed to assess the quality of postoperative recovery in women undergoing open abdominal hysterectomy under general anesthesia.

Aim: This study aimed to evaluate the quality of recovery and analgesia performed under general anesthesia in total abdominal hysterectomy (TAH).

Patients and Methods: This retrospective observational case review was conducted in 26 females, ASA I or II, who presented for elective TAH under standard general anesthesia (GA). The primary outcome was the postoperative pain and analgesia assessed by using the Quality of Recovery Scale (QoR-40) and Visual Analog Scale (VAS scale). Secondary outcomes included the intraoperative opioid consumption, time to first flatus, and time to first discharge from bed, postoperative nausea and vomiting, and patient satisfaction.

Conclusion: The observational case review presented through open hysterectomy conducted under general endotracheal anesthesia showed postoperative global QoR-40 scores ranging between 218.24 and 282.02 (198-245). Furthermore, intraoperatively opioid consumption was high, and postoperatively, the time to first flatus, time to first discharge from bed, and post-anesthesia care unit discharge time were prolonged. Patient satisfaction was average.

Keywords: postoperative pain, analgesia, total abdominal hysterectomy, quality of recovery scale - QoR-40, VAS scale

Introduction

Hysterectomy is the second most common procedure performed in women after obstetric surgery, which is in part related to gynecological malignancy affecting over 1,000,000 women per year[1]. Total abdominal hysterectomy (TAH) is a safe and suitable procedure for patients suffering from advanced pelvic malignancies and other pelvic pathologies that are unsuitable for vaginal or laparoscopic surgery[2]. TAH often results in significant pain and slow recovery, and postoperative pain is easily overlooked. Therefore, persistent opioid use is reported in 5% regardless of the surgical route[1]. Most studies assessing the quality of post-anesthetic and surgical recovery analyze elements such as recovery time, cardiorespiratory complications, pain, postoperative nausea and vomiting (PONV), length of stay, or other complications[3].

Inadequate analgesic management after gynecologic surgery is a major driver of postoperative complications, delayed recovery, and increased opioid use[4]. When considered alone, these aspects do not necessarily mirror the recovery of most patients undergoing anesthesia and surgery. Therefore, quality-of-life assessment from the patient's point of view has become an important factor to be considered in studies investigating the anesthesia and surgery effects on patient recovery and satisfaction[5]. The present observational case review aimed to evaluate the quality of postoperative recovery in women undergoing TAH performed under general anesthesia. We hypothesize that a TAH conducted under general anesthesia does not offer a good quality of recovery 24 hours after anesthesia.

Aim

This study aimed to evaluate the quality of recovery and analgesia using the Quality of Recovery Scale-QoR-40 and the Visual Analogue Scale-VAS during and after transabdominal open gynecological surgeries[6].

Materials and methods

An observational study of 26 consecutive patients undergoing open gynecological surgery was conducted at the Special Hospital for Gynecology and Obstetrics "Mother Teresa" in Skopje, North Macedonia.

The case review included 26 patients who met the inclusion criteria: patients scheduled for open gynecological surgery, age between 20-60 years, BMI <32%, no serious comorbidities (ASA-American Society of Anesthesiologists classification) of 1-2.

Exclusion criteria: any history of allergy to ropivacaine, ketoprofen and tramadol, coagulopathy, needle site infection, and patients with an ASA classification >2.

Patients received standard general anesthesia. After premedication with 8 mg dexamethasone and 4 mg ondansetron, for induction in general endotracheal anesthesia propofol 2 mg/kg, fentanyl 0.4 μg/kg and rocuronium 0.8 mg/kg were used. Anesthesia maintenance continued with propofol 20 μg/kg/h and remifentanil 25 μg/kg/h.

Intraoperatively, hemodynamics and respiratory parameters were continuously monitored using noninvasive methods for perioperative assessment. Cardiac activity was monitored with electrocardiography (ECG), mean arterial pressure (MAP), heart rate per minute (bpm), peripheral arterial saturation (SpO2), and end-tidal carbon dioxide (EtCO2), recorded at identical 15-minute intervals throughout the operation (15 min, 30 min, 45 min, 1 hour and 1,5 hours for measurement of the parameters) and on 6h,12h and 24h after the operation.

The primary outcome was the assessment of the quality of recovery on the first postoperative day. The presence of postoperative nausea and vomiting, the quality of recovery according to the Quality of Recovery Questionnaire (QoR-40), and the degree of pain using the Visual Analogue Scale (VAS) were assessed and measured at intervals after surgery, at 6, 12, 24, and 48 hours. The Quality of Recovery Scale, which is a multidimensional tool developed by Miles *et al*. in 2000 [7], includes a specific questionnaire with 40 items that measure the following five dimensions: physical comfort (12 items), emotional state (nine items), physical independence (five items), psychological support (seven items), and pain (seven items) [7-10]. The secondary outcomes included intraoperative opioid consumption, first peristaltic wave (flatus), duration of PACU stay, time to first discharge from bed, postoperative opioid use, and patient satisfaction[11-17].

Statistical analysis

Data processing was performed using the statistical software programs Microsoft Excel, MedCalc 23.0, and JASP.

The data are presented with their mean, standard deviation (SD), standard error (SE), and 95% CI, and for the descriptive parameters of the populations of interest with absolute numbers and percentages.

The Mann-Whitney U-test and ANOVA tests were used when comparing and testing hypotheses.

The statistical significance level was set at a p value of < 0.05.

Results

The characteristics of the study group, including age, ethnicity, body mass index, ASA classification, education, use of medications, cigarette and alcohol consumption, are presented in Table 1, including some other important medical data.

Table 1. Statistical demographic patient data

Patients	n	Mean (SD) or %
Age	26	47.38 (11.060)
Ethnicity	26	
Macedonian	11	42.31 %
Albanian	15	57.69 %
Drug therapy -hypertension	26	
Yes	7	26.92 %
No	19	73.08 %
Body height	26	161.08 (5.290)
Body weight	26	72.12 (9.056)
Body mass index (BMI)	26	27.85 (3.780)
ASA	26	
1	20	76.92 %
2	6	23.08 %
Education	26	
Elementary school	8	30.77 %
High school	13	50 %
University degree	5	19.23%
Smoking	26	
Yes	2	7.69 %
No	24	92.31%
Alcohol	26	
Yes	0	0%
No	26	100%

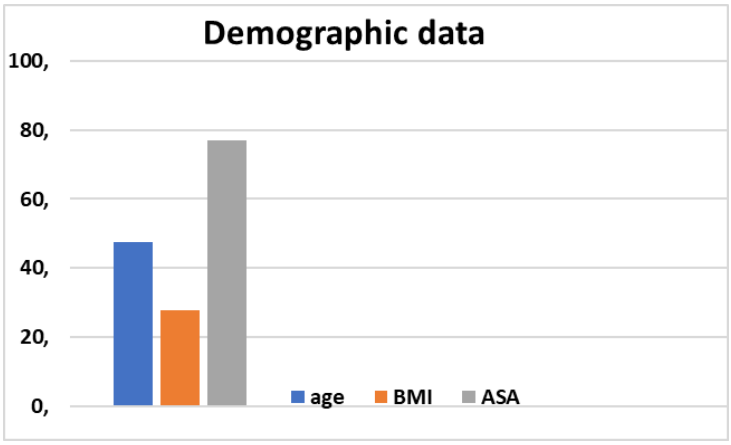

Fig. 1. Patient demographic data

Figure 1 shows patients' demographic characteristics. The age ranged between 43 and 51 years, with an average of 47.38 (11.060). The BMI distribution had an average of 27.85 (3.780). Patients were mainly distributed in the American Society of Anesthesiology (ASA) score of 1 (76.92 %).

Preoperatively, patients who received standard general anesthesia had a mean pain score of 55.50 (51.3-59.7). On the first postoperative day, the mean pain score was 26.81 (20.79-32.82), which was lower compared to preoperative score. Before hospital discharge, the mean pain score increased again to 45.96 (41.53-50.39). Preoperatively, the mean physical comfort score was 70.65 (62.21-79.09). On the first postoperative day, this score decreased to 40.12 (29.93-50.3), and before hospital discharge, it slightly increased to 64.65 (54.21-75.09).

Table 2. Statistical data and results for patient preoperative and postoperative data on first postoperative day and before hospital discharge

	QoR 40 Questionnaire Indicators	Mean	Median	SD	Margin of error	95% Confidence interval
Preoperative	Pain	55.50	56	11.734	4.199	51.3-59.7
	Physical comfort	70.65	63	23.598	8.444	62.21-79.09
	Physical independence	40.35	40	5.275	1.887	38.46-42.24
	Psychological support	61.38	60	8.319	2.976	58.4-64.36
	Emotional status	54.85	49.5	19.278	6.898	47.95-61.75
	Total QoR score	282.73	268.5	68.206	24.40	/
Postoperative day 1	Pain	26.81	20	16.804	6.013	20.79-32.82
	Physical comfort	40.12	32	28.473	10.188	29.93-50.3
	Physical independence	39.54	40	5.330	1.907	37.63-41.45
	Psychological support	58.19	58	11.320	4.051	54.14-62.24
	Emotional status	52.77	48	24.795	8.872	43.9-61.64
	Total QoR score	218.24	198	86.670	31.014	/
Before being discharged from hospital	Pain	45.96	43.5	12.385	4.431	41.53-50.39
	Physical comfort	64.65	62	29.178	10.441	54.21-75.09
	Physical independence	31.18	30	5.960	2.132	29.05-33.31
	Psychological support	100.77	60	195.382	69.915	30.85-170.69
	Emotional status	55.46	49.5	18.965	6.786	48.67-62.25
	Total QoR score	282.02	245	261.872	93.708	/

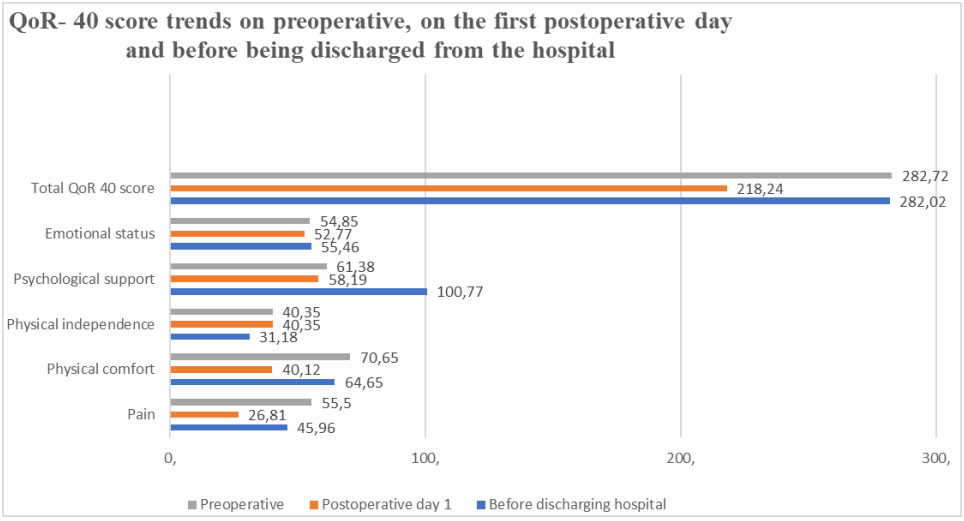

Fig. 2. Statistical data and results for patient preoperative and postoperative data on the first postoperative day (24 hours after surgery) and before being discharged from hospital

In the perioperative period, the same pattern was observed for physical independence, with a preoperative mean score of 40.35 (38.46-42.24), on the first postoperative day of 39.54 (37.63-41.45), and before hospital discharge 31.18 (29.05-33.31). Psychological support scores remained stable, with a preoperative mean score of 61.38 (58.4-64.36), 58.19 (54.14-62.24) on the first postoperative day, and 100.77(30.85-170.69) before discharge. The emotional status scores showed a similar stable pattern, with a preoperative mean score of 54.85 (47.95-61.75), 52.77 (43.9-61.64) on the first postoperative day, and 55.46 (48.67-62.25) before discharge. The mean total QoR-40 score was 282.73 (268.5) in the preoperative period, decreased to 218.24 (198) on the first postoperative day, and increased again to 282.02 (245) before discharge.

Table 3. Statistical data and results for patient intraoperative data

Intraoperative data	Mean	Median	SD	Margin of error	95% CI
Anesthesia time (min)	114.40	115	37.4811	13.4121	100.99-127.81
Operation time (min)	100.20	100	36.4714	13.0509	87.15-113.25
Intraoperative propofol (mg)	526.80	500	96.9415	34.6894	492.11-561.49
Intraoperative fentanyl (μg)	192.00	200	75.9385	21.1737	164.83-219.17
Intraoperative remifentanil (μg)	2.00	2	/	/	/
Urine output (ml)	1102.0	1100	702.448	251.363	850.64-1353.36

Statistical analysis showed a mean anesthesia time of 114.40 minutes (100.99-127.81) and a mean operation time of 100.20 minutes (87.15-113.25). Intraoperative mean propofol consumption was on average 526.80 milligrams (492.11-561.49), and mean fentanyl consumption of 192.00 micrograms (164.83-219.17). They were used for induction in general anesthesia. The mean intraoperative remifentanil consumption was 2.00 (2) micrograms.

Table 4. Statistical data and results for patient postoperative data

Postoperative data	Mean	Median	SD	Margin of error	95% CI
Postoperative paracetamol (mg)	1400.00	1500	577.350	206.598	1193.4-1606.6
Postoperative tramadol (mg)	158.00	200	47.169	16.879	141.12-174.88
Postoperative metamizole (gr)	15.00	15	5.4006	1.9325	13.07-16.93
Postoperative ketoprofen (mg)	25.60	0	59.866	21.4225	4.18-47.02
Duration of PACU stay (min)	204	230	84.950	30.398	173.6-234.4
Time to first flatus (min)	1248.40	1250	86.201	30.846	1217.55-1279.25
Time to first discharging from bed (min)	1210	1200	72.743	26.030	1183.97-1236.03
PONY	5.54	6.5	4.606	1.648	3.89-7.19
Urine output total 24 h (ml)	2328.00	2000	1006.859	360.293	1967.71-2688.29
Patient satisfaction	8.77	9	0.908	0.324	8.44-9.09

Table 4 presents the overall consumption of pain suppressant drugs used up to 48 hours postoperatively, and showed a high use of these drugs in the first 24 hours after surgery. The median stay in PACU was 204 minutes (173.6-234.4). The mean time to first flatus was 1248.40 minutes (1217.55-1279.25), and the mean time to first discharge from bed was 1210 minutes (1183.97-1236.03). The mean PONY value was 5.54 (3.89-7.19), and patient satisfaction was 8.77(8.44-9.09).

Table 5. Statistical data and results for patient postoperative VAS score: VAS 0 (immediately after awakening), VAS 1 (6 hours after surgery), VAS 2 (12 hours after surgery), VAS 3 (24 hours after surgery), and VAS 4 (48 hours after surgery)

VAS score	Mean	Median	SD	Margin of error	95% CI
VAS 0	9.23	10	0.9922	0.3550	8.88-9.59
VAS 1	8.50	8	0.9899	0.3542	8.15-8.85
VAS 2	6.38	6	1.3289	0.4755	5.91-6.86
VAS 3	3.96	4	1.1482	0.4108	3.55-4.37
VAS 4	2.58	3	0.9868	0.3531	2.22-2.93

Values displayed in Table 5 are postoperative pain scores using the Visual Analog Scale at the following five time points: VAS 0 (immediately after awakening), VAS 1 (6 hours after surgery), VAS 2 (12 hours after surgery), VAS 3 (24 hours after surgery), and VAS 4 (48 hours after surgery). The VAS scores showed significantly high pain levels: VAS 0 with a mean of 9.23 (8.88-9.59), VAS 1 with a mean of 8.50 (8.15-8.85), and VAS 2 with a mean of 6.38 (5.91-6.86). Pain gradually decreased at VAS 3 to a mean value of 3.96 (3.55-4.37), and finally to VAS 4 to a mean of 2.58 (2.22-2.93).

Discussion

In this observational case review, overall QoR-40 scores were lower after applied standard general anesthesia in transabdominal open gynecological surgery. Preoperatively, patients had a mean pain score of 55.50 (51.3-59.7), and on the first postoperative day the mean pain score was 26.81 (20.79-32.82), which was lower compared to preoperative score, due to increased pain after surgery. Before hospital discharge, the mean pain score increased to 45.96 (41.53-50.39). Preoperatively, the mean physical comfort score was 70.65 (62.21-79.09). It decreased to 40.12 (29.93-50.3) on the first postoperative day, and increased to 64.65 (54.21-75.09) before hospital discharge. This indicates that general anesthesia does not provide good postoperative analgesia and improve the quality of postoperative recovery[18].

In the perioperative period, the mean physical independence score showed the same pattern, with a preoperative score of 40.35 (38.46-42.24), 39.54 (37.63-41.45) on the first postoperative day, and 31.18 (29.05-33.31) before hospital discharge. Psychological support scores remained stable, with a preoperative score of 61.38 (58.4-64.36), 58.19 (54.14-62.24) on the first postoperative day, and 100.77 (30.85-170.69) before discharge. The emotional status scores showed a similar stable pattern, with a preoperative mean score of 54.85 (47.95-61.75), 52.77 (43.9-61.64) on the first postoperative day, and 55.46 (48.67-62.25) before discharge. The mean total QoR-40 score was 282.73 (268.5) in the preoperative period, decreased to 218.24 (198) on the first postoperative day, and increased again 282.02 (245) before discharge[19].

Intraoperative mean propofol consumption of 526.80 milligrams (492.11-561.49), and mean fentanyl consumption of 192.00 micrograms (164.83-219.17) were used for induction in general anesthesia. The mean intraoperative remifentanil consumption was 2.00 (2) micrograms. The overall consumption of pain suppressant drugs used up to 48 hours after surgery showed median and high use of these medicines in the first 24 hours after surgery[20].

Regarding PONV, the mean value was 5.54 (3.89-7.19), due to high perioperative opioid application as an important risk factor for PONV and tremors[21]. In addition, there was a prolonged stay in the PACU of 204 minutes (173.6-234.4). The mean time to first flatus was 1248.40 minutes (1217.55-1279.25), and the mean time to first discharge from bed was 1210 minutes (1183.97-1236.03)[22-23].

The VAS scores showed significantly high pain scores in the VAS 0 with a mean value of 9.23 (8.88-9.59), VAS 1 mean value of 8.50 (8.15-8.85), and VAS 2 with a mean 6.38 (5.91-

6.86), slowly decreasing to VAS 3 with a mean value of 3.96 (3.55-4.37), and finally to VAS 4 with a mean value of 2.58 (2.22-2.93). The high pain scores measured using the Visual Analog Scale indicated that general anesthesia did not provide good postoperative analgesia and improve the quality of postoperative recovery[24,25].

Conclusion

Our results from this observational case review of open hysterectomy conducted under general endotracheal anesthesia showed that patient's postoperative global QoR-40 scores ranged between 218.24 and 282.02 (198-245). Furthermore, intraoperatively opioid consumption was high, and postoperatively, the time to first flatus, first discharge from bed, and post-anesthesia care unit discharge time were prolonged. Regarding patient satisfaction, it was shown to be average. For adequate interpretation of the results of this study, it is necessary to have a group of patients who would receive a multimodal analgesic protocol, specific to the surgical intervention and potentially include opioids, non-opioid systemic analgesics such as acetaminophen, nonsteroidal anti-inflammatory drugs, gabapentinoids, ketamine, and local anesthetics administered by infiltration, regional block, or via intravenous route.

Conflict of interest statement. None declared.

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